IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

DONALD L. HOHNSTEIN ET AL.

Group Art Unit: 2618

Examiner: Tan H. Trinh

Serial No.: 09/658,241

Filed: September 8, 2000

For: REVERSE SECTORIZATION WIRELESS COMMUNICATION

Attorney Docket No.: 1822 (USW 0601 PUS)

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
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Sir:

This is an Appeal Brief from the final rejection of claims 1-19, 22-29 and 31 of the Office Action mailed on April 4, 2007 for the above-identified patent application.

I. REAL PARTY IN INTEREST

The real party in interest is Qwest Communications International Inc. ("Assignee"), a corporation organized and existing under the laws of the state of Delaware, and having a place of business at 1801 California Street, 38th Floor, Denver, Colorado 80202.

II. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences known to the Appellants, the Appellants' legal representative, or the Assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-19, 22-29 and 31 are pending in this application. Claims 20, 21 and 30 have been canceled. Claims 1-19, 22-29 and 31 have been rejected and are the subject of this appeal.

IV. STATUS OF AMENDMENTS

None.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 provides a wireless communication system. The system includes a plurality of access points, Figure 15 (22), each access point having at least one omnidirectional antenna forming a substantially uniform coverage area around the access point, Application, p. 25, ll. 9-11, and a plurality of subscriber units, Figure 15 (30), each subscriber unit having at least one directional antenna forming a directional coverage area, the directional coverage area selectable from a plurality of directional coverage areas provided by the subscriber unit, Application, p. 28, ll. 3-11. Each subscriber unit communicates with a particular access point through transmissions between the subscriber unit directional antenna and the omnidirectional antenna for the particular access point. Application, p. 6, ll. 22-23; p. 28, ll. 3-21.

Claim 14 provides a method of wireless communication. The method includes transmitting downlink information in a substantially uniform coverage area around each of a plurality of access points, Figure 15 (24), and receiving the downlink information at a subscriber unit, p. 6, ll. 22-24. The method also includes transmitting uplink information in a focused coverage area from the subscriber unit, Figure 15 (622), receiving the uplink information at one of the access points, p. 6, ll. 22-24, and routing information between the plurality of access points by receiving the information in a distribution point and sending the information to an access point in communication with the distribution point if the information is destined for a subscriber unit in communication with the access point, otherwise forwarding

the information to another distribution point in communication with the distribution point, Application, p. 9, ll. 3-24; p. 10, ll. 15-29; p. 11, ll. 11-24.

Claim 29 provides a wireless communication system. The system includes a plurality of access points, Figure 8 (22), each access point transmitting and receiving information packets, p. 7, ll. 13-23, each information packet transmitted over a substantially uniform coverage area around the access point. Application, p. 28, ll. 3-9. The system also includes a network of distribution points in communication with the access points, Figure 8 (40), the distribution points routing information packets between the access points based upon a forwarding equivalency class for each access point. Application, p. 21, ll. 1-20. The system further includes a plurality of subscriber units, Figure 8 (26), each subscriber unit transmitting and receiving information packets, p. 7, ll. 13-23, each subscriber unit transmitting information packets over a focused directional coverage area. Application, p. 28, ll. 3-11.

Claim 31 provides a method of communicating. The method includes establishing a plurality of access points, each access point having an omnidirectional antenna, Application, p. 28, ll. 7-9, establishing a channel between one of the access points and one of a plurality of subscriber units by selecting one of a plurality of antenna directions in the subscriber unit, the selected antenna direction implementing a directional antenna, p. 28, ll. 12-21, transmitting information packets in a uniform coverage area around each access point, Figure 15 (24), and receiving information packets at each access point, each received information packet transmitted from the directional antenna, Application, p. 28, ll. 3-21.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-4, 6-19, 22-28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 4,144,496 (Cunningham) in view of U.S. Pat. Pub. No. 2002/0068612 (Carey). Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable

over Carey. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cunningham in view of Carey and in further view of U.S. Pat. No. 6,690,662 (Komara).

VII. ARGUMENT

A. Claims 1-4, 6-19, 22-28 and 31 are patentable under 35 U.S.C. 103(a) over Cunningham in view of Carey

With regard to claim 1, and as admitted by Examiner, Cunningham fails to teach each subscriber unit having at least one directional antenna forming a directional coverage area. Office Action, April 4, 2007, p. 2. As a result, Cunningham fails to teach the directional coverage area selectable from a plurality of directional coverage areas provided by the subscriber unit. Nevertheless, Examiner cites to a discussion related to Cunningham's directional antenna array 32 associated with base station 24 to find the preceding limitation. Office Action, April 4, 2007, p. 2. Cunningham's base station 24, however, is not a subscriber unit.

With regard to claim 31, for the reasons discussed with reference to Claim 1, Cunningham fails to teach selecting one of a plurality of antenna directions in the subscriber unit, the selected antenna direction implementing a directional antenna and Cunningham fails to teach each received information packet transmitted from the directional antenna.

With regard to claims 1 and 31, Examiner fails to establish a *prima facie* case of obviousness. Examiner asserts that "it would have been obvious . . . to modify . . . Cunningham with Carey on the directional antenna, in order to provide user transmits and receives data encoded on or more data carries to and from the base station over the two-way broadband wireless communication link . . . ." Office Action, April 4, 2007, p. 3. Examiner's assertion, however, lacks technical merit. Examiner presents no evidence that Carey's directional antennas associated with its fixed subscriber stations could be modified to work with Cunningham's mobile units. Furthermore, the passages of Carey cited by Examiner

to find reason to combine Carey with Cunningham merely indicate that Carey's internal subscriber communication link uses carriers that have a frequency range different than that of Carey's wireless communication link:

> The directional antenna 60 of the fixed subscriber station 20 shown in FIG. 3 is coupled via a link 62 to a subscriber transceiver 64 which is, in turn, coupled to an internal subscriber communication link 66. Preferably, the internal subscriber communication link 66 uses data carriers 68 and 69 within a frequency range that is different from that of the data carriers 28 and 30 of the wireless communication link 26.
>
> [0068].

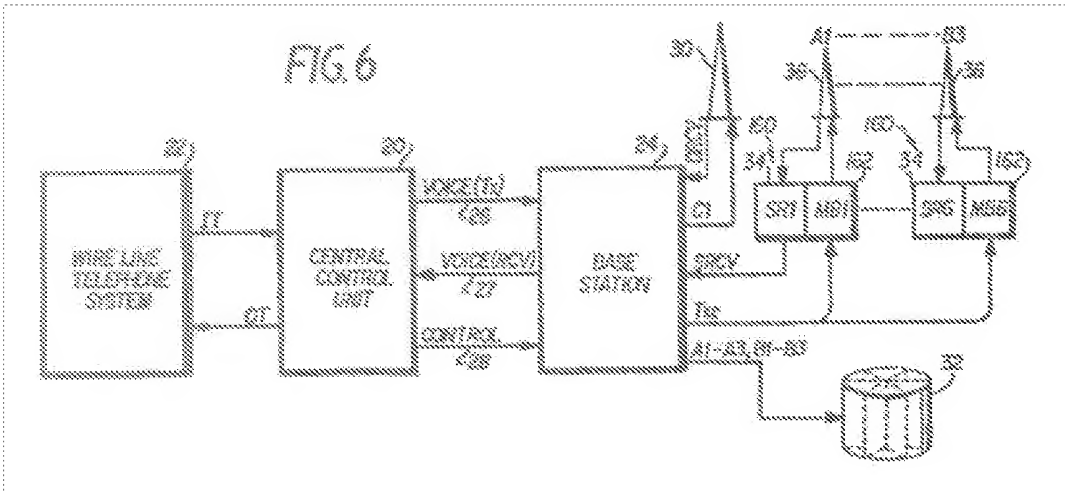
Such disclosure, assuming *arguendo* that Carey's directional antennas could be modified to work with Cunningham's mobile units, does not provide reason to combine Carey's directional antennas associated with its fixed subscriber stations with Cunningham's mobile units.

With regard to claim 14, Cunningham fails to teach transmitting uplink information in a focused coverage area from the subscriber unit. Examiner cites to the following passages of Cunningham to find this limitation:

> Upon receipt of and proper decoding of the broadcast mobile unit address over the idle channel, the addressed mobile unit 40 may return a supervisory signal followed by an appropriate identifying code resulting in seizure of the idle channel by the called mobile unit. Since the mobile unit transmitters are typically less powerful than the base station transmitters, the response from the mobile unit 40 may be relayed to the central control unit 20 via the satellite receiver 34 tuned to the return link, i.e., the up-link, of the seized idle channel in the appropriate sector.
>
> Col. 7, ll. 43-53.

The above, however, merely indicates that Cunningham's mobile unit transmitters are less powerful than its base station transmitters.

With regard to claim 14, and as admitted by Examiner, Cunningham fails to teach receiving the information in a distribution point. Office Action, April 4, 2007, p. 5. As a result, Cunningham fails to teach forwarding the information to another distribution point in communication with the distribution point. Nevertheless, Examiner cites to Figure 6 of Cunningham to find the preceding limitation:



By citing to Figure 6, Examiner appears to argue that central control unit 20 will either send information to base station 24 if the information is destined for a mobile unit 40 in communication with base station 24 or forward the information to another central control unit in communication with the central control unit 20. Cunningham, however, does not provide any such teaching. Instead, Cunningham merely indicates that central control unit 20 may control the selective connection of incoming trunks to base station 24 and may also transmit control signals to base station 24:

> Referring now to FIGS. 6 and 7, the central control unit 20 and the base station 24 may operate essentially as was described in connection with FIGS. 1-5 to selectively connect subscribers of the wire line telephone system 22 and at a plurality of satellite stations 160 remote from the base station 24.
>
> Col. 15, ll. 21-27.

> Referring now to FIGS. 1 and 2 wherein one embodiment of the system is generally illustrated, a central control unit 20 may be conventionally interfaced with the incoming or input trunk lines IT and the outgoing or output trunk lines OT of a commercially installed wire line telephone system 22. The central control unit 20 may control the selective connection of the incoming trunks IT to a base station 24 via pairs of voice grade transmission lines 26, hereinafter referred to by the designation VOICE (TX). The central control unit 20 may also transmit control signals CONTROL by way of transmission lines 28 to provide control of the base station operation.
>
> Col. 4, ll. 21-33.

With regard to claim 14, Examiner fails to establish a *prima facie* case of obviousness. Examiner asserts that "it would have been obvious . . . to modify above teaches of Cunningham with Carey in order to provide user with data from external data network . . . ." Office Action, April 4, 2007, p. 5. Examiner's assertion, however, lacks technical merit. As discussed above, Cunningham's central control unit 20 "may be conventionally interfaced with the incoming or input trunk lines IT and the outgoing or output trunk lines OT of a commercially installed wire line telephone system 22." Col. 4, ll. 23-26. Examiner's statement "in order to provide user with data from external data network" does not make any sense given that central control unit 20 already interfaces with wire line telephone system 22.

Claims 2-4, 6-13, 15-19 and 22-28 are patentable because they depend from one of claims 1 and 14.

B. Claim 29 is patentable under U.S.C. 103(a) over Carey

With regard to claim 29, Carey fails to teach each information packet transmitted over a substantially uniform coverage area around the access point. Examiner cites to the following passages of Carey to find this limitation:

> In the wireless communication system of FIG. 4, the base station 22 preferably includes at least one transceiver 32 for each sector of the coverage area 52. Accordingly, for purposes of illustration, FIG. 4 shows three transceivers 32, each transceiver corresponding to a respective sector 152, 252, and 352. Each transceiver 32 may include a discrete transmitter to transmit a downstream frequency channel and a discrete receiver to receive an upstream frequency channel, respectively, for each sector, or may be an integrated transceiver unit. While FIG. 4 shows only three transceivers corresponding to three sectors, more than one upstream or downstream frequency channel may be employed in any sector; hence, the base station 22 may include a dedicated transceiver for each upstream/downstream channel pair in a sector. Each transceiver 32 of the base station 22 may be coupled to the internal communication link 34.
>
> [0080].

The above, however, indicates that a transceiver 32 of a base station 22 services a particular sector of the coverage area. Such a sector is not a substantially uniform coverage area around base station 22.

With regard to claim 29, Examiner fails to establish a *prima facie* case of obviousness. Examiner first asserts, without support, that "Carey teaches a set of packets with similar or identical characteristics which may be forwarded the same way to all the subscriber." Office Action, April 4, 2007, pp. 8-9. Examiner next uses this unsupported assertion together with a sentence quoted from [0047] of Carey to draw the following conclusion: "That is obvious the distribution points routing information packets between the access points based upon a forwarding equivalency class (FEC) for each access point," Office Action, April 4, 2007, p. 9. Absent evidence to the contrary, Applicants' Attorney submits that Carey does not teach "a set of packets with similar or identical characteristics which may be forwarded the same way to all the subscriber." Furthermore, the statement "The wireless communication system of FIG. 1C couples one or more fixed subscriber stations 20 to the data network 48 to provide a variety of communication services to the fixed subscriber stations,

such as, but not limited to, video conferencing, telephony, high-speed Internet access, and two-way high-speed voice and data transfer," Carey, [0047], simply does not suggest routing information packets between the access points based upon a forwarding equivalency class for each access point even assuming, *arguendo*, that Carey did teach "a set of packets with similar or identical characteristics which may be forwarded the same way to all the subscriber." Additionally, Examiner's reason for combining the references lacks technical clarity and merit:

> [I]t would have been obvious . . . to modify above teaching of Carey, in order to provide user a higher-layer packet depend on the configuration of the router or distribution points, and destination IP address with the Quality of service class is often used.
>
> Office Action, April 4, 2007, p. 9.

Examiner presents no discussion as to whether the wireless communication system of Carey could be modified to route information packets between base stations based upon a forwarding equivalency class for each access point. To the extent Examiner would argue that such disclosure is inherent to Carey, Examiner fails to carry the burden:

> "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original)
>
> MPEP 2112.

C. Claim 5 is patentable under 35 U.S.C. 103(a) over Cunningham in view of Carey and in further Komara

For the reasons claim 1 is patentable, claim 5 is patentable.

The fee of $500 as applicable under the provisions of 37 C.F.R. § 41.20(b)(2) is enclosed. Please charge any additional fee or credit any overpayment in connection with this filing to our Deposit Account No. 02-3978.

Respectfully submitted,

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Enclosure - Appendices

VIII. CLAIMS APPENDIX

1. A wireless communication system comprising:

a plurality of access points, each access point having at least one omnidirectional antenna forming a substantially uniform coverage area around the access point; and

a plurality of subscriber units, each subscriber unit having at least one directional antenna forming a directional coverage area, the directional coverage area selectable from a plurality of directional coverage areas provided by the subscriber unit;

whereby each subscriber unit communicates with a particular access point through transmissions between the subscriber unit directional antenna and the omnidirectional antenna for the particular access point.

2. A wireless communication system as in claim 1 further comprising a routing network interconnecting the plurality of access points.

3. A wireless communication system as in claim 2 wherein the routing network comprises a distributed network of distribution points.

4. A wireless communication system as in claim 3 wherein at least one distribution point is in the same location as one access point.

5. A wireless communication system as in claim 2 wherein at least one access point is in wireless communication with the routing network through at least one backhaul antenna.

6. A wireless communication system as in claim 1 wherein transmissions between the subscriber unit and the access point comprise packetized information.

7. A wireless communication system as in claim 1 wherein the subscriber unit is a terminal network controller comprising at least one interface, each interface providing access to the wireless communication system.

8. A wireless communication system as in claim 7 wherein the terminal network controller further comprises a routing switch routing information packets to and from the at least one interface.

9. A wireless communication system as in claim 1 wherein the directional antenna comprises a plurality of antenna patches, the subscriber unit selecting at least one antenna patch as the directional antenna.

10. A wireless communication system as in claim 1 wherein the directional antenna is operative to be positioned to optimize transmissions between the subscriber unit and the particular access point.

11. A wireless communication system as in claim 1 further comprising:

a plurality of access points, each access point having at least one directional antenna forming a coverage sector around a portion of the access point; and

a plurality of subscriber units, each subscriber unit having at least one omnidirectional antenna forming a substantially uniform coverage area around the subscriber unit, each subscriber unit communicating with a particular access point through transmissions between the subscriber unit omnidirectional antenna and the directional antenna for the particular access point.

12. A wireless communication system as in claim 11 wherein at least one access point has both at least one omnidirectional antenna and at least one directional antenna.

13. A wireless communication system as in claim 11 wherein access points transmit from omnidirectional antennas at a first frequency and from directional antennas at a second frequency different than the first frequency.

14. A method of wireless communication comprising:

transmitting downlink information in a substantially uniform coverage area around each of a plurality of access points

receiving the downlink information at a subscriber unit;

transmitting uplink information in a focused coverage area from the subscriber unit;

receiving the uplink information at one of the access points; and

routing information between the plurality of access points by receiving the information in a distribution point and sending the information to an access point in communication with the distribution point if the information is destined for a subscriber unit in communication with the access point, otherwise forwarding the information to another distribution point in communication with the distribution point.

15. A method of wireless communication as in claim 14 wherein transmitting in the substantially uniform coverage area around each of the access points comprises transmitting from an omnidirectional antenna and receiving the uplink information comprises receiving at the omnidirectional antenna.

16. A method of wireless communication as in claim 14 wherein transmitting in a focused coverage area comprises transmitting from a directional antenna and receiving the downlink information comprises receiving at the directional antenna.

17. A method of wireless communication as in claim 16 further comprising selecting at least one of a plurality of antenna patches to form the directional antenna.

18. A method of wireless communication as in claim 16 further comprising aiming the directional antenna to improve receiving the downlink information.

19. A method of wireless communication as in claim 14 wherein downlink information and uplink information comprises packetized information.

22. A method of wireless communication as in claim 14 wherein routing information comprises transmitting the information between each access point and one of a plurality of distribution points.

23. A method of wireless communication as in claim 22 wherein transmitting the information comprises wireless transmission.

24. A method of wireless communication as in claim 22 wherein at least one access point is in the same location as at least one distribution point.

25. A method of wireless communication as in claim 14 further comprising routing the downlink information to one of a plurality of interfaces at the subscriber unit.

26. A method of wireless communication as in claim 14 further comprising:

transmitting downlink information in a focused coverage area around each of a plurality of access points

receiving the downlink information at a subscriber unit;

transmitting uplink information from a substantially uniform coverage area around the subscriber unit; and

receiving the uplink information at one of the access points.

27. A method of wireless communication as in claim 26 wherein at least one access point both transmits downlink information in a focused coverage area and transmits downlink information in a substantially uniform coverage area.

28. A method of wireless communication as in claim 26 wherein downlink information transmitted in the substantially uniform coverage area is transmitted at a first frequency and downlink information transmitted in the focused coverage area is transmitted at a second frequency different than the first frequency.

29. A wireless communication system comprising:

a plurality of access points, each access point transmitting and receiving information packets, each information packet transmitted over a substantially uniform coverage area around the access point;

a network of distribution points in communication with the access points, the distribution points routing information packets between the access points based upon a forwarding equivalency class for each access point; and

a plurality of subscriber units, each subscriber unit transmitting and receiving information packets, each subscriber unit transmitting information packets over a focused directional coverage area.

31. A method of communicating comprising:

establishing a plurality of access points, each access point having an omnidirectional antenna;

establishing a channel between one of the access points and one of a plurality of subscriber units by selecting one of a plurality of antenna directions in the subscriber unit, the selected antenna direction implementing a directional antenna;

transmitting information packets in a uniform coverage area around each access point; and

receiving information packets at each access point, each received information packet transmitted from the directional antenna.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.